VII. "Further particulars of the Swedish Arctic Expedition, in a Letter addressed to the President, by Prof. Nordenskiöld." Communicated by the President. Received October 15, 1868.

Kobbe Bay, Sept. 16th, 1868.

Sir,—In my last letter from Stockholm I promised to send you, with the returning naturalists, a detailed relation of the first scientific part of the Swedish Arctic Expedition of 1868; but unfortunately our last coal-ship, with which five of our fellow travellers, with the rich geological, zoological, and botanical collections, made during this season in the arctic regions, return to Tromsö, and which gives us the last occasion of communicating with Europe, leaves this harbour *in some hours*, and that makes it impossible for me to keep my promise. However, a detailed report will immediately be sent to you by one of the returning naturalists, Dr. Malmgren, a member also of the expeditions of 1861 and 1864. The remaining part of our expedition will from here go, first, to Seven Island, and then (perhaps one of the first days of October), after having deposited a boat and a depôt of provisions on *Ross Islet*, further northward. The polar sea was in the end of August quite covered with ice north of 81° 9′, the highest latitude hitherto reached by our steamer. But a week later the sea was open to Walden and Table Island, and the 8th of September I could, from one of the highest peaks of Parry Island, discern only traces of ice further *northward*.

I remain, Sir, respectfully yours,

A. I. Nordenskiöld.

VIII. "Notice of an Observation of the Spectrum of a Solar Prominence, by J. N. Lockyer, Esq., in a Letter to the Secretary." Communicated by Dr. Sharpey. Received October 21, 1868.

October 20, 1868.

Sir,—I beg to anticipate a more detailed communication by informing you that, after a number of failures, which made the attempt seem hopeless, I have this morning perfectly succeeded in obtaining and observing part of the spectrum of a solar prominence.

As a result I have established the existence of three bright lines in the following positions:—

I. Absolutely coincident with C.

II. Nearly coincident with F.

III. Near D.

The third line (the one near D) is more refrangible than the more refrangible of the two darkest lines by eight or nine degrees of Kirchhoff's

scale. I cannot speak with exactness, as this part of the spectrum requires remapping.

I have evidence that the prominence was a very fine one.

The instrument employed is the solar spectroscope, the funds for the construction of which were supplied by the Government-Grant Committee. It is to be regretted that its construction has been so long delayed.

I have &c.,

J. Norman Lockyer.

The Secretary of the Royal Society.

IX. "On a New Series of Chemical Reactions produced by Light." By John Tyndall, LL.D., F.R.S., &c. Received October 24, 1868.

I ask permission of the Royal Society to draw the attention of chemists to a form or method of experiment which, though obvious, is, I am informed, unknown, and which, I doubt not, will in their hands become a new experimental power. It consists in subjecting the vapours of volatile liquids to the action of concentrated sunlight, or to the concentrated beam of the electric light.

Action of the Electric Light.

A glass tube 2·8 feet long and of 2·5 inches internal diameter, frequently employed in my researches on radiant heat, was supported horizontally. At one end of it was placed an electric lamp, the height and position of both being so arranged that the axis of the glass tube and that of the parallel beam issuing from the lamp were coincident. The tube in the first experiments was closed by plates of rock-salt, and subsequently by plates of glass.

As on former occasions, for the sake of distinction, I will call this tube *the experimental tube*.

The experimental tube was connected with an air-pump, and also with a series of drying and other tubes used for the purification of the air.

A number of test-tubes (I suppose I have used fifty of them in all) were converted into Woulfe's flasks. Each of them was stopped by a cork through which passed two glass tubes: one of these tubes (*a*) ended immediately below the cork, while the other (*b*) descended to the bottom of the flask, being drawn out at its lower end to an orifice about 0·03 of an inch in diameter. It was found necessary to coat the cork carefully with cement.

The little flask thus formed was partially filled with the liquid whose vapour was to be examined; it was then introduced into the path of the purified current of air.

The experimental tube being exhausted, and the cock which cut off the supply of purified air being cautiously turned on, the air entered the flask